

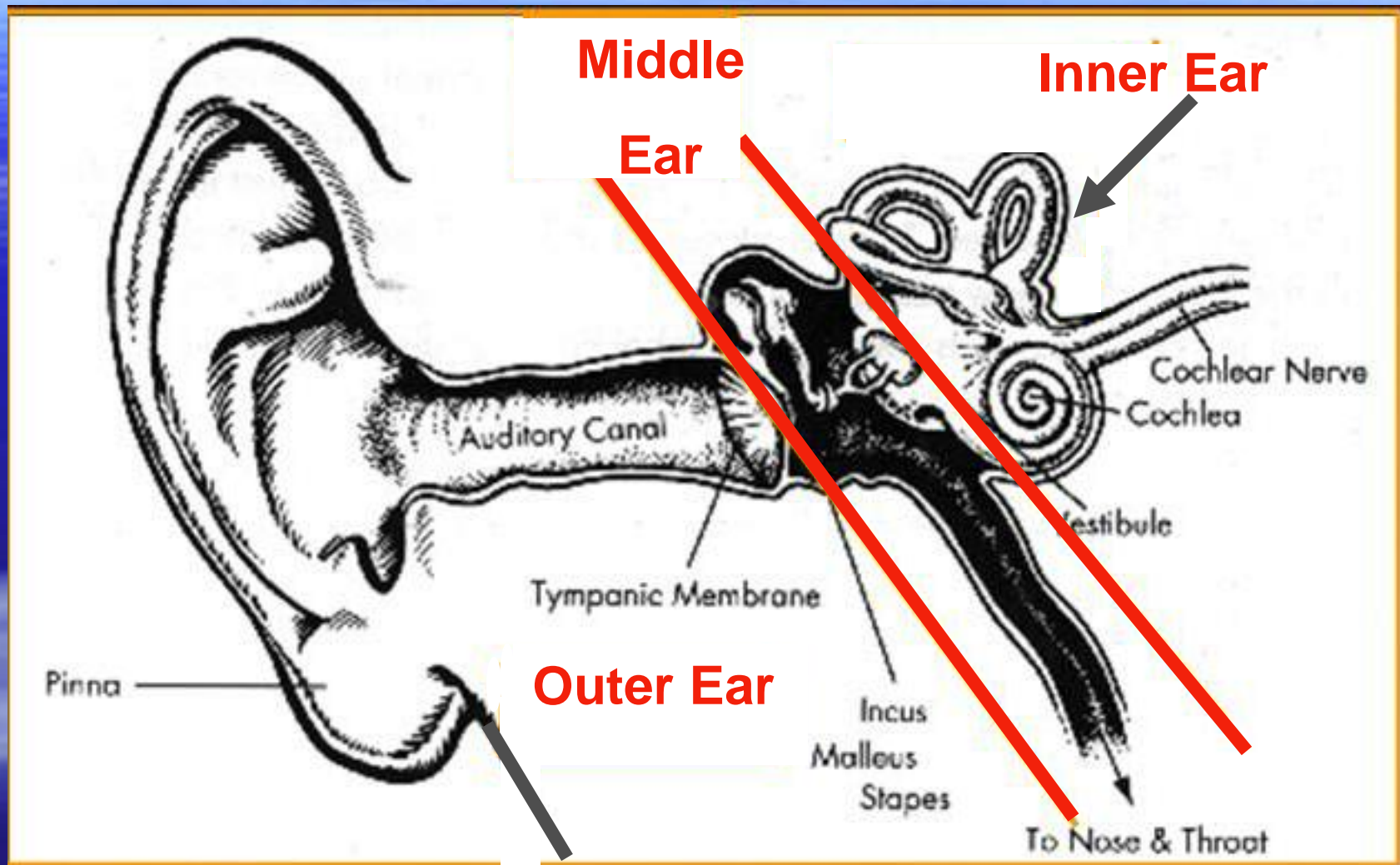


# **HOW NOISE EXPOSURE AFFECTS YOU**

# **SOUND ENERGY TRAVELS IN A WAVE FORM**



# Three Sections of Your Ear

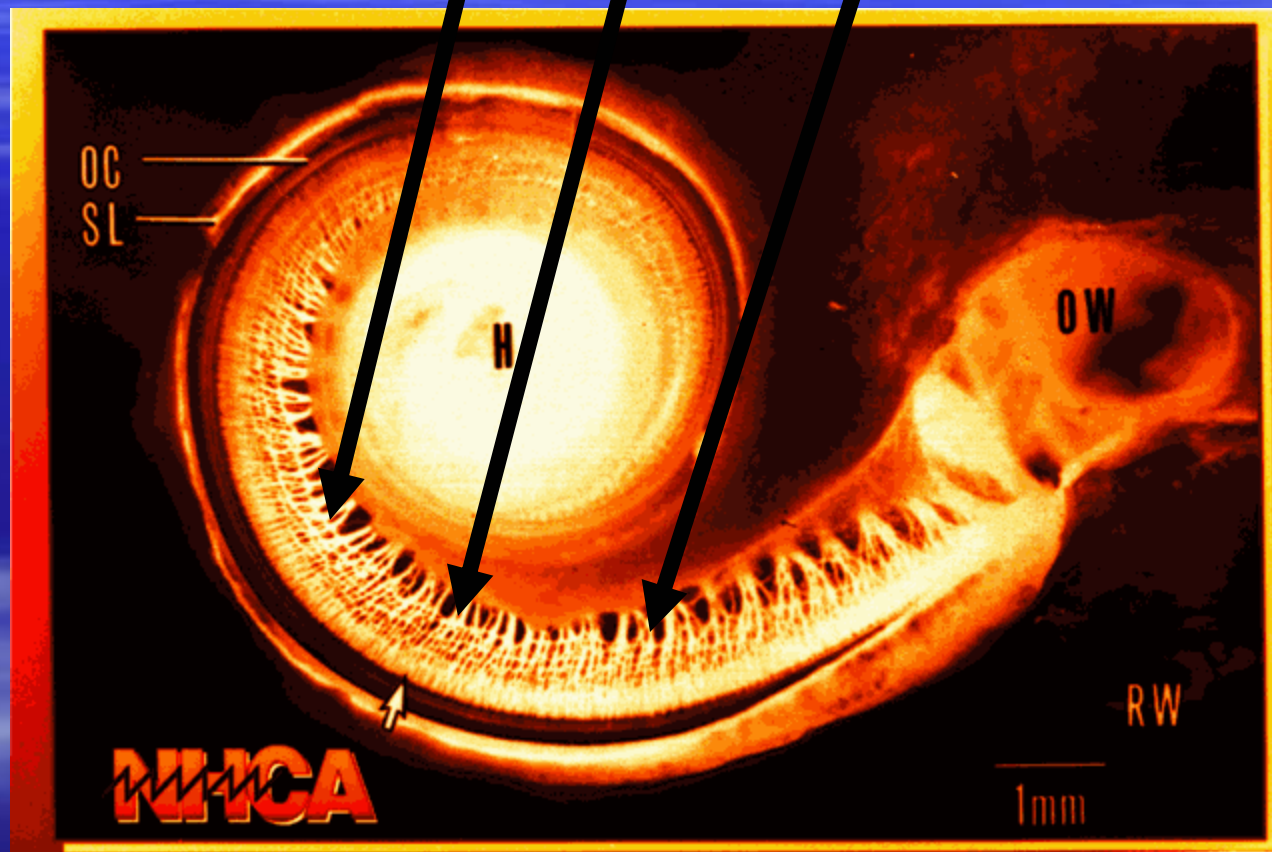


Courtesy of 3M Corporation: PENDING

**The fluid in your inner  
ear moves hair cells  
which send signals to  
your brain**



# Normal Hair Cells

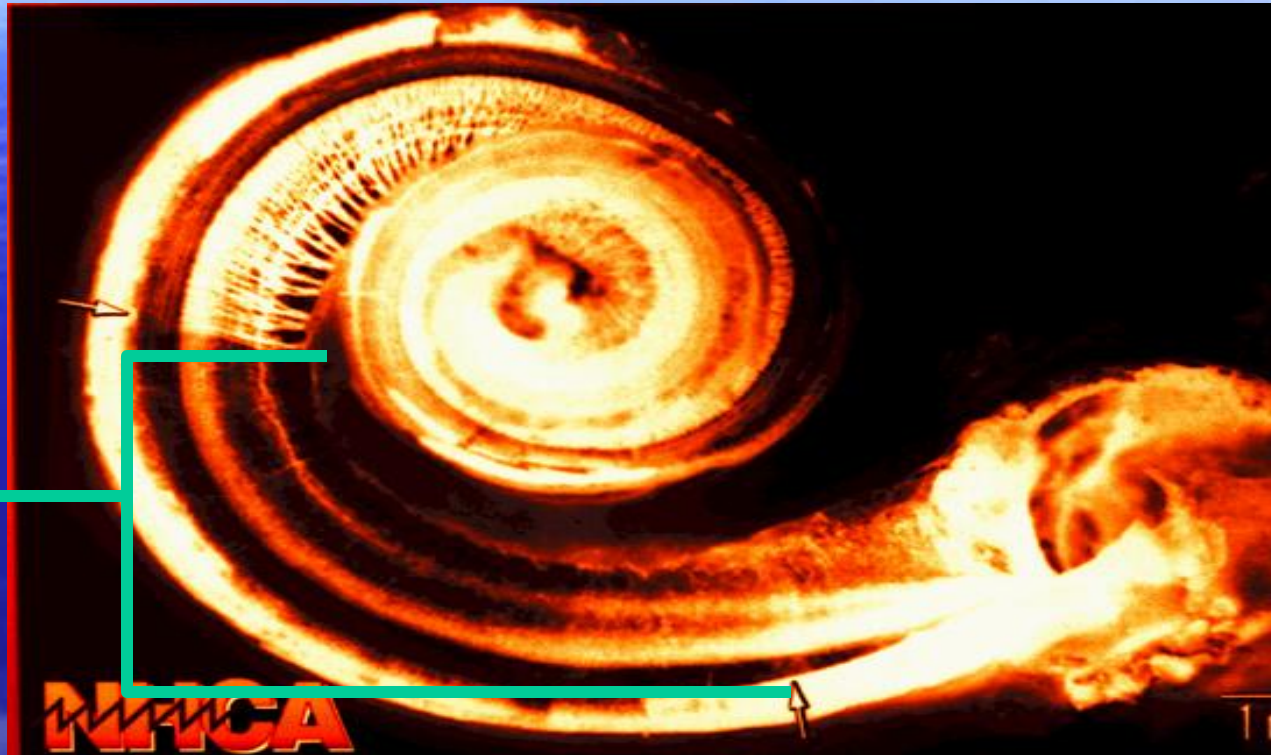


Courtesy of National Hearing Conservation  
Association: PENDING

**When *your* hair cells  
are damaged  
these signals become  
weak or stop  
completely**

# Damaged / Missing Hair Cells

The ability to  
hear is  
gone from  
this area



Courtesy of National Hearing  
Conservation Association: PENDING

# Typical Sources

# Noise Level (dB)

<b>Rocket launch</b>	<b>180</b>
<b>Jet takeoff (at 200 ft)</b>	<b>120</b>
<b>Surface drill</b>	<b>100</b>
<b>Bulldozer</b>	<b>90</b>
<b>Air conditioning unit</b>	<b>60</b>
<b>Quiet office</b>	<b>40</b>
<b>Broadcast studio</b>	<b>20</b>



# Do **You** Know That

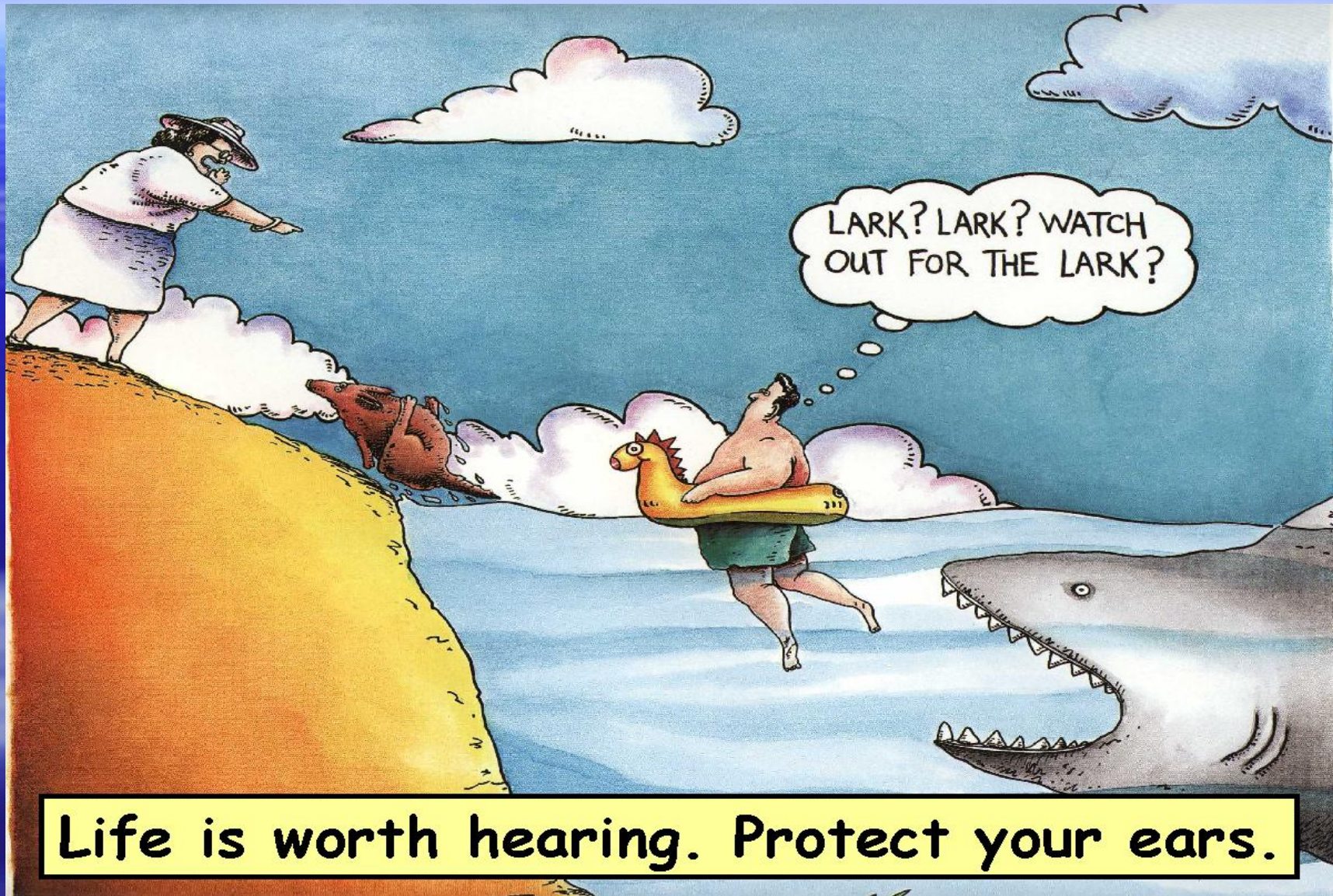
- A gun blast or rocket launch can cause
  - Permanent hearing loss
- Very loud music can cause
  - Temporary hearing loss
- Occupational noise exposure can cause
  - Hearing loss at a younger age

# **Noise exposure may also cause**

- Stress
- High blood pressure
- Distraction
- Sleep loss
- Lost productivity



# Loss of Ability to Communicate



**Life is worth hearing. Protect your ears.**

Courtesy of AERO Corp: PENDING



# Results of Hearing Loss

- Degrades and even destroys the quality of **YOUR** life by
  - Interfering with **YOUR** ability to hear sounds of nature and music
  - Limiting **YOUR** ability to communicate with family, friends and co-workers
  - Leading to **YOUR** withdrawal from social situations
  - Causing **YOU** to place the blame on others
  - Lowering **YOUR** self-esteem leading to isolation and depression



NOISE EXPOSURE  
IS DETERMINED BY  
HOW  
LOUD THE SOUND IS  
AND  
HOW LONG YOU  
ARE EXPOSED TO IT

# MSHA's Table of Permissible Noise Exposures

Number of Hours  
Per Day

Average Sound Level  
(dBA)

- 8
- 4
- 2
- 1
- $\frac{1}{2}$
- $\frac{1}{4}$

- 90
- 95
- 100
- 105
- 110
- 115

**AN IMPORTANT CONCEPT:**

**FOR EVERY INCREASE IN THE  
AVERAGE SOUND LEVEL OF 5  
DECIBELS (dB)**

**THE ALLOWABLE EXPOSURE TIME  
IS REDUCED BY 50 %**

**49% of Metal/NonMetal  
Miners Have Hearing  
Impairment\* by Age 50  
Compared with 9% of the  
General Population**

**\*An average 25 dB hearing loss at 1, 2, 3, and 4 kHz**

**Source: Prevalence of Hearing Loss for Noise  
Exposed Metal/Nonmetal Miners (NIOSH, 1997)**



# **90% Of Coal Miners Have Hearing Impairment\* by Age 51 Compared with 10% of the General Population**

**\* An average 25 dB hearing loss at 1,2,3 and 4 kHz**

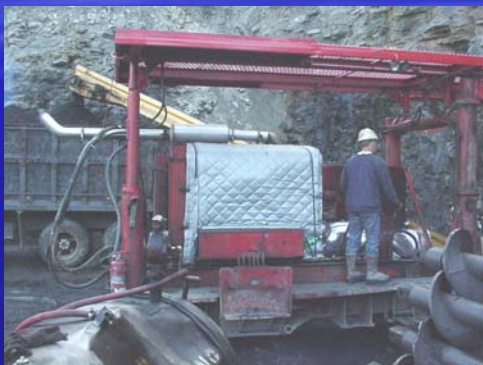
**Source: Analysis of Audiograms for a Large Cohort  
of Noise-Exposed Miners (NIOSH, 1996)**

# IT ALL COMES DOWN TO THIS

Protect **Your**  
Hearing Now

OR

Wear this  
Later



Courtesy of Starkey Laboratories: PENDING





***Daddy's Home ©  
By Wayne Collett***

**Your Children can whisper to you now.  
Don't make them shout at you in the future**